AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently amended) A method of detecting a clonal population of cells in a biological sample, ~~which clonal cells are characterised by a diagnostically distinctive nucleic acid region,~~ said method comprising co-localising ~~the subject nucleic acid regions~~ mitochondrial DNA derived from said sample, which co-localisation is based on nucleotide sequence identity, and qualitatively and/or quantitatively detecting the levels of said co-localised ~~nucleic acid regions~~mitochondrial DNA wherein a higher level of a co-localised ~~nucleic acid region~~mitochondrial DNA population relative to background levels is indicative of the presence of a clonal population of cells ~~in said sample~~characteristic of a leukaemia, lymphoma, myeloma, myelodysplasia, polycythaemia vera or a myeloproliferative syndrome.

2. (Currently amended) A method for diagnosing and/or monitoring a clonal population of cells in a mammal, ~~which clonal cells are characterised by a diagnostically distinctive nucleic acid region,~~ said method comprising co-localising ~~the subject nucleic acid regions~~mitochondrial DNA derived from a biological sample derived from said mammal, which co-localisation is based on nucleotide sequence identity, and qualitatively and/or quantitatively detecting the levels of said co-localised ~~nucleic acid regions~~mitochondrial DNA wherein a higher level of a co-localised ~~nucleic acid region~~ mitochondrial DNA population relative to background levels is indicative of the presence of a clonal population of cells ~~in said sample~~ characteristic of a leukaemia, lymphoma, myeloma, myelodysplasia, polycythaemia vera or a myeloproliferative syndrome.

3-4. (Canceled)

5. (Currently amended) The method according to claim [[4]]1 or 2 wherein said leukaemia is actue myeloid leukaemia or acute lymphoblastic leukaemia.

6-12. (Canceled)

13. (Currently amended) The method according to claim [[12]]1 or 2, wherein said mitochondrial DNA is mitochondrial D loop DNA.

14. (Canceled)

15. (Currently amended) The method according to ~~any one of~~ claims 1[[-14]] or 2 wherein said co-localisation is achieved utilising any one of the techniques of:

(i) Denaturing gradient electrophoresis.

(ii) Temperature gradient denaturing electrophoresis

(iii) Constant denaturing electrophoresis

(iv) Single strand conformational electrophoresis

(v) Denaturing high performance liquid chromatography

(vi) Microassays

(vii) Mass spectrometry

16. (Currently amended) The method according to claim [[14]]1 or 2 wherein said co-localisation is achieved utilising denaturing gel or capillary electrophoresis.

17. (Currently amended) A method for diagnosing and/or monitoring ~~a mammalian disease condition characterised by the presence of a clonal population of cells, which clonal cells are characterised by a diagnostically distinctive nucleic acid region~~leukaemia, lymphoma, myeloma, myelodysplasia, polycythaemia vera or a myeloproliferative syndrome, said method comprising co-localising ~~the subject nucleic acid regions~~ mitochondrial DNA derived from a biological sample derived from said mammal, which co-localisation is based on nucleotide sequence identity and qualitatively and/or quantitatively detecting the levels of said co-localised ~~nucleic acid regions~~mitochondrial DNA wherein a higher level of the co-localised ~~nucleic acid region~~mitochondrial DNA population relative to background levels is indicative of the presence of a clonal population of cells ~~in said sample~~characteristic of leukaemia, lymphoma, myeloma, myelodysplasia, polycythaemia vera or a myeloproliferative syndrome.

18-19. (Canceled)

20. (Currently amended) The method according to claim [[19]]17 wherein said leukaemia is actue myeloid leukaemia or acute lymphoblastic leukaemia.

21-27. (Canceled)

28. (Currently amended) The method according to claim [[27]]17 or 20, wherein said mitochondrial DNA is mitochondrial D loop DNA.

29. (Canceled)

30. (Currently amended) The method according to ~~any one of~~ claims [[17-29]]17 or 20 wherein said co-localisation is achieved utilising any one of the techniques of:

(i) Denaturing gradient electrophoresis.

(ii) Temperature gradient denaturing electrophoresis

(iii) Constant denaturing electrophoresis

(iv) Single strand conformational electrophoresis

(v) Denaturing high performance liquid chromatography

(vi) Microassays

(vii) Mass spectrometry

31. (Currently amended) The method according to claim [[30]]17 or 20 wherein said co-localisation is achieved utilising denaturing gel or capillary electrophoresis.